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Intellectual Property Law

FACSIMILE COVER SHEET

DATE: August 7, 2007

TO: EXAMINER: Aaron Austin FAX NO.: 571-273-8300
GAU: 1775

FROM: Jeffrey S. Abel
Reg. No. 36,079

U.S. APP NO.: 10/602,468

FILING DATE: June 23, 2003

APPLICANT(S): Venkat Selvamanickam, et al.

ATTY DKT NO.: 1014-SP156-US

TITLE: METALORGANIC CHEMICAL VAPOR DEPOSITION (MOCVD) PROCESS AND APPARATUS TO PRODUCE MULTI-LAYER HIGH-TEMPERATURE SUPERCONDUCTING (HTS) COATED TAPE

NO. OF PAGES (INCL. COVER SHEET): 5 .

Attached please find:

☒ Transmittal Form (1 pg)
☒ Executed Rule 132 Declaration (3 pgs)

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PTO/SB/21 (09-04)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	4

Application Number	10/602,468
Filing Date	June 23, 2003
First Named Inventor	Venkat Selvamanickam
Art Unit	1775
Examiner Name	Aaron Austin
Attorney Docket Number	1014-SP156-US

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please identify below):

Executed Rule 132 Declaration (3 pgs);

Remarks

CUSTOMER NO.: 34456

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	LARSON NEWMAN ABEL POLANSKY & WHITE, LLP		
Signature			
Printed name	Jeffrey S. Abel		
Date	08/07/2007	Reg. No.	36,079

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature	E.K. Dougherty		
Typed or printed name	Elise K. Dougherty	Date	08/07/2007

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Venkat Selvamanickam, et al.		
Title:	METALORGANIC CHEMICAL VAPOR DEPOSITION (MOCVD) PROCESS AND APPARATUS TO PRODUCE MULTILAYER HIGH-TEMPERATURE SUPERCONDUCTING (HTS) COATED TAPE		
App. No.:	10/602,468	Filed:	June 23, 2003
Examiner:	Jennifer C. McNeil	Group Art Unit:	1775
Customer No.:	34456	Confirmation No.:	2661
Atty. Dkt. No.:	1014-SP156-US		

MS AF
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. §1.132

Sir, I hereby declare and state:

1. I am a joint inventor of the subject matter presently claimed in the above-identified patent application.

2. I received my doctorate degree in Materials Engineering from the University of Houston in Houston, TX.

3. I have been employed by IGC/SuperPower, Inc. since 1994, wherein I have been mainly engaged in research and development of superconducting materials, superconducting conductors, and processes for forming same.

4. I have reviewed the Office Action dated October 18, 2005, including the positions taken by the PTO with respect to several prior art references. I have also particularly reviewed the subject matter of US 2005/0173679, Mannhart et al. (Mannhart). For the reasons discussed below, Mannhart fails to disclose (or suggest) all features of the claimed invention.

5. The claimed invention is drawn to a superconductive article comprising a substrate tape and a superconductive layer. The superconductive layer notably includes a plurality of individually identifiable superconductive films of the same material, the films being disposed one atop another and atomically bonded to each other free of an intervening bonding layer. As described in the present specification, the films are formed by a metalorganic chemical vapor deposition (MOCVD) process, in which metalorganic precursors are reacted with each other in a deposition chamber, the reaction product forming a superconductive material that deposits on the substrate tape. As described in the present specification, pages 23+ in connection with FIGs. 1-4b, the substrate tape is translated through an MOCVD system containing multiple compartments arranged in series, each defining a deposition zone (see Zones A-E). Each zone has associated unique control parameters as described in Tables 1-5. As the substrate translates through the MOCVD system, the substrate tape experiences multiple deposition events, each deposition event corresponding to each zone, thereby forming an identifiable, discrete superconducting film. That is, by passage of the tape through a zone, the zone forms as-deposited superconductive material in the form of a film.

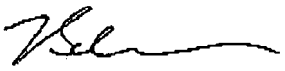
MOCVD deposition results in epitaxial growth of the depositing film. As such, the microstructure of the preceding film, i.e. crystal grain orientation, is continued and duplicated in the depositing film. That is, the depositing film is atomically bonded to the preceding film. More specifically, the atoms of the depositing film atomically bond to the atoms of the preceding film in well defined crystallographically defined manner as a result of the sequential MOCVD process flow. While a telltale interfacial boundary remains between films, the films are nevertheless necessarily atomically bonded to each other. These features can be clearly seen in the attached cross sectional microstructure obtained by Transmission Electron Microscopy (TEM) of a superconductive article prepared by the process disclosed in the present specification and described above. The TEM image was obtained by Dr. Terry Holesinger, a world-renowned expert, at Los Alamos National Laboratory. Dr. Holesinger followed the above-described process to unequivocally demonstrate the nature of the bonding between overlying films. The TEM microstructure clearly shows the interfacial boundaries between the films that are created between each superconductive film. However, dislocations can be seen threading through all the films indicating that the films are crystallographically oriented in the same fashion one atop each

other i.e. they have an epitaxial relationship with each other and are atomically bonded to each other.

6. In contrast, Mannhart is drawn to a process for joining separate superconductive films through physical contact or an intermediate layer, and does not disclose direct, atomic bonding with each other. In one embodiment, Mannhart discloses physically clamping two superconductors together (FIG. 5). In another, Mannhart discloses melting the intermediate layer to fuse the two adjacent superconductive layers. I acknowledge that Mannhart discloses multilayers in paragraph [0041]. However, such general suggestion does not extend to the superconductive layer as claimed, which features multiple films atomically bonded directly to each other. Adding yet additional layers to the embodiments of Mannhart remains reliant on physically bonding (clamping) or use of intermediate layers.

7. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like, so made, are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,



August 6, 2007

Date

Venkat Selvamanickam